

Exhibit 48

STS-122/1E

FD 03 Execute Package



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JEDI (Joint **E**xecute package **D**evelopment and **I**ntegration), v2.04.0003

16-0996 (MSG 018) - MTL Supply Jumper Big Picture Words

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Peggy, Dan, Hans and Leo,

MTL Supply Jumper Big Picture Words - Kudos for having the forethought to request that we fly up the extra TCS Vestibule Omega Jumpers in the Vestibule Outfitting Kit!! We now can put one of them to good use. Due to some late-breaking analysis, it seems that without the JEM installed, the MTL Vestibule Supply Jumper (to Columbus) will be cold enough to condense. So, we'll now use the extra LTL Omega Supply Jumper, which is insulated, in place of the uninsulated MTL Omega Supply Jumper in the Forward Vestibule Quadrant. Analysis shows these two supply jumpers are fully interchangeable, including QD keying. However, we have uplinked a procedure to remove the keying feature from the QD, if it becomes necessary.

But wait, there's more! Since this spare LTL Omega Supply Jumper is insulated, we believe it will interfere with one of the CBM Center Disk Cover Brackets and cause the Supply jumper to protrude a little bit into the hatch corridor. We also think that if the bracket remains installed it will be difficult to install the QD Insulation Mitten on the Node 2 side. Later in the outfitting procedure, the bracket may also make it difficult to install the Nitrogen Jumper behind the MTL TCS Supply Jumper (the bracket makes it difficult to rotate the now-insulated, MTL Omega Supply Jumper out of the way **to use the dreaded FFTD** on the Nitrogen Jumper Gamah Fitting). Dan and Hans, you may remember we saw a similar issue during OOCT on the LTL Omega jumpers, prompting us to use straight TCS Insulated Jumpers in those locations (aft quadrant).

The CBM Center Disk Cover Bracket removal has two little gotchas: 1) none of the hardware is captive: p-clamp fastening and mounting hardware, as well as a plethora of stacked shims behind each of the mounting bolts, and 2) there are two locating pins on the bracket that are inserted into tight-fitting holes on the bulkhead, which can make it difficult to remove the bracket. We think that it will take 15 minutes to remove the bracket, or up to 30 minutes if you have to struggle due to the tight locating pins.

We have **not** updated the Vestibule Outfitting Procedure with this change. Rather, we are simply telling you to exchange the MTL Supply Jumper with the 'spare' LTL Omega Supply jumper in Step 9 of Columbus Vestibule Outfitting (Assy Ops book). **It will be your call** as to whether the CBM Center Disk Cover Bracket really needs to be removed, as we think it will. It may be that only the cable P-Clamps need to be removed. In either case, we have a procedure in the IPV Uplinked Procedures folder with all the info you need. Use care to avoid insulation damage in any event. You can remove the bracket at any time and just bag, tag and gray tape the loose parts inside the Vestibule.